DEPARTMENT OF ECONOMICS AND FINANCE

COLLEGE OF BUSINESS AND ECONOMICS

UNIVERSITY OF CANTERBURY

CHRISTCHURCH, NEW ZEALAND

Comment on "Promises and Partnership"

Cary Deck, Maroš Servátka, and Steven Tucker

WORKING PAPER

No. 14/2011

Department of Economics and Finance
College of Business and Economics
University of Canterbury
Private Bag 4800, Christchurch
New Zealand

Comment on "Promises and Partnership"

Cary Deck
Department of Economics
University of Arkansas

Maroš Servátka*
New Zealand Experimental
Economics Laboratory
University of Canterbury

Steven Tucker
New Zealand Experimental
Economics Laboratory
University of Canterbury

April 11, 2011

Abstract: Charness and Dufwenberg (2006) find that promises increase cooperation and suggest that the behavior of subjects in their experiment is driven by guilt aversion. By modifying the procedures to include a double blind social distance protocol we test an alternative explanation that promise keeping was due to external influence and reputational concerns. Our data are statistically indistinguishable from those of Charness and Dufwenberg and therefore provide strong evidence that their observed effects regarding the impact of communication are due to internal factors and not due to an outside bystander.

JEL classification: C70; C91

Key words: Experiment, promises, partnership, guilt aversion, psychological game theory, trust, lies, social distance, behavioral economics, hidden action.

1. INTRODUCTION

Anecdotal and scientific evidence suggest that promises – commitments to perform a certain action – are a powerful tool in increasing levels of cooperation. What makes people keep their promises and why do their recipients trust them? In a widely cited paper, Gary Charness and Martin Dufwenberg (2006, p. 1579; hereafter C&D) argue that "The evidence is consistent with people striving to live up to others' expectations so as to avoid guilt." Drawing upon the literature on psychological game theory (Geanakoplos, Pearce, and Stacchetti, 1989; Battigalli and Dufwenberg, 2008), C&D (p. 1579) model, "A guilt-averse player [as one who] suffers from guilt to the extent he believes he hurts others relative to what they believe they will get. Therefore, he is motivated by his *beliefs about others' beliefs."* This guilt aversion (see also

***Corresponding Author:** Maroš Servátka, New Zealand Experimental Economics Laboratory, Department of Economics and Finance, University of Canterbury, Private Bag 4800, Christchurch 8140, New Zealand, Phone: +64-3-3642825 ext. 6825, Fax: +64-3-3642635, Email: maros.servatka@canterbury.ac.nz.

Battigalli and Dufwenberg, 2007) is treated as an internal influence on a player and not reliant on external enforcement.

To test the conjecture that promise keeping is driven by guilt aversion, C&D employ a game with hidden action in which one player never learns whether a promise was kept or not. While C&D provide evidence that promises strengthen beliefs about one's cooperation and that these promises are often kept, their experimental design also allows for an alternative explanation. In particular, their experiments were conducted using a standard single blind (or low social distance) protocol in which the players did not know the identity of their counterpart, but the experimenter did. Further, the experimenter could observe both the message and the act before paying the participant in person. Therefore, their experiment does not distinguish whether the observed behavior is due to internal guilt aversion or due to external influence and reputational concerns.

Previous research has shown that subjects in related games behave differently when the experimenter can identify who took which action (single blind) and when the experimenter cannot (double blind).[1] Hoffman, McCabe, and Smith (1996) found that dictators acted in a far more selfish manner under double blind procedures than under any of the other treatments they considered. Cox and Deck (2005) report the results of a binary trust game using both single and double blind procedures. With single blind procedures, they replicate the results of McCabe and Smith (2000) that approximately 75% of second movers are trustworthy. However, under double blind procedures only 25% of the subjects are trustworthy. Such a radical change in behavior clearly demonstrates the impact that observability by the experimenter can have on behavior where trust is involved.

We replicate the study of C&D under a double blind protocol. Observed behavior is very similar to the results of C&D suggesting that the trustworthy behavior is in fact due to internal guilt aversion.

2. EXPERIMENTAL DESIGN AND PROCEDURES

We focus on the (5,5) game with messages of C&D. Player 1 can choose *Out* in which case both players get $5. Alternatively, player 1 can choose *In*, in which case the choice of player 2 will determine the payoffs of both players. If player 2 chooses *Don't Roll* then player 1 earns $0 and player 2 earns $14. If player 2 chooses *Roll* then player 2 earns $10 and player 1 earns $12 if a die roll ends up on 2, 3, 4, 5, or 6 and earns $0 if the die roll ends up on 1. Thus, player 1 cannot determine if a payoff of $0 is due to a selfish act by player 2 or simple bad luck.

[1] Single blind refers to the anonymity between the subjects whereas double blind refers to the anonymity between subjects and between the subjects and the experimenter. This terminology differs from other disciplines such as the medical field where double blind is taken to mean that the experimenter does not know to which treatment an experimental unit is assigned. For this reason, some have proposed that economists should instead use the terms single anonymous and double anonymous. While this argument has merit, the convention appears to be ingrained.

Following C&D, prior to Player 1 making a decision, the matched player 2 had the option to send a handwritten message to player 1. Subjects were told that the only thing that could not be put in the message was personally identifying information.

We implement a double blind payoff procedure similar to that in Hoffman, McCabe, Shachat, and Smith (1994), Berg, Dickhaut, and McCabe (1995), Cox (2002, 2009), Cox and Deck (2005, 2006), and Servátka (2009). As subjects entered the lab, they drew slips indicating if they were in the **A** role (player 1) or **B** role (player 2). **B**s sat on the left in the back half of the lab and **A**s sat on the left in the front half of the lab. Each person was seated at individual workstation with privacy dividers. Instructions, included in Appendix A, were then handed out to everyone and all questions were answered publicly. After any questions were answered, a large curtain was drawn most of the way across the room from left to right so that everyone could verify that the procedures were implemented as described in the instructions, but could not see from back to front or vice versa. At this point, identical envelopes with coded mailbox keys and coded response forms were placed in a large box. This box was taken around the **B** half of the lab and subjects drew out a single envelope, but waited to open it until the experimenters had returned to the **A** side. **B** subjects made their decisions, placed the mailbox key in their pocket, and returned the response form into the envelope. After **B**s finished, they dropped their envelopes back into the large box. The envelopes were then shuffled and opened in the gap between the two rooms. Everyone could observe the envelopes being opened, but could not see anything written on the forms. Messages were then checked for appropriateness, cut off from the **B** forms, and stapled to coded response forms for **A**s. This procedure ensured that nobody could link the decision to a subject's identity, but the experimenters could still correctly map the subjects' decisions into their payoffs. The forms were then placed in envelopes along with a coded mailbox key. **A**s then selected an envelope from a box of envelopes and waited for the experimenters to return to the **B** side before opening the envelopes, placing the keys into their pockets, making their decisions, and then returning the forms into the envelopes. When everyone was done, the experimenters determined the payoffs for each player[2], placed the money in plain envelopes, and then placed the envelopes in the coded mailboxes in another room in the lab. Subjects went into the room, opened their mailboxes, collected their earnings envelopes, dropped their keys into a box, and left the lab.

A total of 90 undergraduate students at the University of Arkansas participated in this study in groups of size 8 to 14. While some had been in unrelated studies, none had participated in any similar studies in the past. Participant received a $5 payment in addition to their salient earning from the game.

[2] Following C&D, the subjects were informed in advance that a die would be rolled for each pair regardless of what actions were actually taken so that one could not infer what actions had been taken from the noise.

3. RESULTS

Table 1 compares behavior between the single blind procedures of C&D and our double blind variation. As is clear from the table, the percentage of **A**s who trust and choose *In* is similar in both studies (67% in C&D and 68% here). The percentage of **B**s who are trustworthy and choose *Roll* is nominally, but not statistically, lower under double blind (74% in C&D and 64% here). Both studies find that half of the pairs end up at the socially optimal outcome where **A** goes *In* and **B** *Rolls*. These results are really surprising given the results of previous comparisons between single and double blind treatments have found large changes in behavior and uniformly found more selfish behavior with the procedure.[3]

Table 1. Observed Aggregate Behavior and Comparison Between Studies

	Single Blind (Charness and Dufwenberg, 2006)	
	A In	**A** Out
B Roll	22	8
B Don't Roll	6	8

	Our Double Blind Study	
	A In	**A** Out
B Roll	21	7
B Don't Roll	10	4

	Single Blind (Charness and Dufwenberg 2006)	Our Double Blind Study	z-statistic	p-value
Percent of **A**s Choosing In	67% (=28/42)	68% (=30/44)	0.15	0.881
Percent of **B**s Choosing Roll	74% (=31/42)	64% (=28/44)	-1.02	0.310

One subject in the role of **B** did not make a choice to *Roll* or *Don't Roll*. This pair is excluded from analysis.

We now turn to the impact of promises on behavior. Each of the 45 messages was scored by four paid coders. Coders were instructed to categorize each message as being blank (i.e. no message), a promise, or empty talk. Appendix B gives the instructions to the coders as well as the each message and how it was scored. Table 2 shows behavior by the category of the message sent/received.

[3] One must always be careful when comparing results across studies. However, behavior in our double blind study is very similar to C&D, showing considerable trustworthiness. In fact, we observe so much trustworthiness that there is little opportunity for a replication of C&D's single blind treatment to yield significantly more trustworthiness and no evidence in the existing literature to suggest that such a treatment would yield less cooperative behavior.

Table 2. Behavior Conditional on Message Type / Promises and Behavior

	Our Double Blind Study				Single Blind (Charness and Dufwenberg 2006)	
Message Type	Promise	Blank	Empty Talk	Non-Promise = Blank + Empty Talk	Promise	Non-Promise
A In	8	9	9	18	22	9
A Out	2	11	3	14	2	9
Percent of **A**s choosing In	80%	45%	75%	56%	92%	50%
B Roll	8	9	10	19	18	10
B Don't Roll	1	11	2	13	6	8
Percent of **B**s choosing Roll	89%	45%	83%	59%	75%	56%

The four coders did not agree on the coding of three messages. We take a conservative approach and exclude the three pairs associated with those messages from the analysis. The person in the A role who was matched with the person in the B role who did not make a choice to either Roll or Don't Roll is included in the analysis, but the person in the B role is not.

As are more trusting when a promise is received relative to the case when no message is received (80% versus 45%, z-statistic = -1.82, p-value = 0.098). However, **A**s are also more trusting when an empty talk is received (75% versus 45%, z-statistic = -1.65, p-value = 0.098) and do not distinguish between promises and empty talk (80% versus 75%, z-statistic = -0.28, p-value = 0.781).

We find that a high percentage (89%) of **B**s keep their promise to *Roll*. The frequency with which **B**s who promise to *Roll* actually *Roll* is significantly greater than the frequency with which those who opt to send no message actually Roll (89% versus 45%, z-statistic = -2.22, p-value = 0.026). Somewhat surprisingly, **B**s who send empty talk messages are more likely to actually *Roll* than those who send no message (83% versus 45%, z-statistic = -2.14, p-value = 0.033), but are indistinguishable from those who sent a promise (83% versus 89%, z-statistic = 0.36, p-value = 0.719).

As with the overall data, we find no evidence on any differences between the two studies when conditioning on message type. When **A** receives a promise we observe 80% choosing *In* while C&D report that 92% choose *In*, an insignificant difference (z-statistic = 0.96, p-value = 0.336). When **A** receives either a blank message or a non-promise, we observe 50% choosing *In* while C&D report that 56% choose *In*, an insignificant difference (z-statistic = -0.43, p-value = 0.670). We observed that 89% of **B**s keep their promise to *Roll* while C&D report that 75% do so, an insignificant difference (z-statistic = -0.87, p-value = 0.385). Finally, we observed that 59% of **B**s *Roll* when no promises was made while C&D report that 56% do so, an insignificant difference (z-statistic = -0.26, p-value = 0.793).

4. CONCLUSIONS

C&D conduct an innovative experiment to explore guilt aversion as a motivation for behavior. They model behavior using psychological game theory and observe choices consistent with people keeping promises because of the internal motivation of not wanting to let someone down. However, their experimental design leaves open the alternative explanation that observed behavior was due to concern about their own reputation and interaction with the experimenters. We modify C&D procedures using a double blind social distance protocol that eliminates this alternative explanation. Our findings are statistically indistinguishable from those of C&D: promises by one player influence behavior of the other player and also that promises are kept. Given that previous work has shown that people behave in a more selfish manner under a double blind experimental design, our results provide strong evidence that the effects regarding the impact of communication documented by C&D are not caused by external influence and reputational concerns.

Acknowledgements: We thank Gary Charness and Martin Dufwenberg for providing helpful comments and suggestions. Financial support was provided by the University of Canterbury, College of Business and Economics. The Erskine Programme supported this research with a Visiting Erskine Fellowship awarded to Cary Deck to visit the University of Canterbury.

REFERENCES

Battigalli, P. and M. Dufwenberg (2007) "Guilt in Games," *American Economic Review Papers & Proceedings*, 97(2), 170-76.

Battigalli, P. and M. Dufwenberg (2008) "Dynamic Psychological Games," *Journal of Economic Theory*, 144(1), 1-35.

Berg, J., J. Dickhaut, and K. McCabe "Trust, Reciprocity and Social History," *Games and Economic Behavior,* 10 (1), 1995, 122-42.

Charness, G. and M. Dufwenberg (2006) "Promises and Partnership," *Econometrica* 74(6), 1579-1601.

Cox, J.C. (2004) "How to Identify Trust and Reciprocity" *Games and Economic Behavior*, 46 (2), 260-81.

Cox, J. C. (2009) "Trust and Reciprocity: Implications of Game Triads and Social Contexts," *New Zealand Economic Papers. Special Issue: Laboratory Experiments in Economics, Finance and Political Science*, 43(2), 89 – 104.

Cox, J. C. and C. A. Deck (2005) “On the Nature of Reciprocal Motives,” *Economic Inquiry*, 43(3), 623-635.

Cox, J.C. and C.A. Deck (2006) “When are Women More Generous than Men?" *Economic Inquiry*, 44(4), 587-98.

Geanakoplos, J., D. Pearce, and E. Stacchetti (1989) “Psychological Games and Sequential Rationality,” *Games and Economic Behavior*, 1(1), 60—79.

Hoffman, E., K. A. McCabe, K. Shachat, and V. L. Smith (1994) “Preferences, Property Rights, and Anonymity in Bargaining Games,” *Games and Economic Behavior*, 7(3), 346-80.

Hoffman, E., K. McCabe, and V. Smith (1996) “Social distance and other-regarding behavior in dictator games,” *American Economic Review*, *86*(3), 653–660.

McCabe, K. and V. Smith (2000) “A Comparison of Naïve and Sophisticated Subject Behavior with Game Theoretic Predictions,” *Proceedings of the National Academy of Sciences*, 97, 3777-3718.

Servátka, M. (2009) “Separating Reputation, Social Influence, and Identification Effects in a Dictator Game,” *European Economic Review*, 53 (2), 197-209.

Appendix A: Subject Instructions and Response Forms

INSTRUCTIONS

Thank you for participating in this session. The purpose of this experiment is to study how people make decisions in a particular situation. Feel free to ask us questions as they arise, by raising your hand. Please do not speak to other participants during the experiment.

You will receive $5 for participating in this session. You may also receive additional money, depending on the decisions made (as described below). Upon completion of the session, this additional amount will be paid to you (as described below).

During the session, you will be paired with another person. However, no participant will ever know the identity of the person with whom he or she is paired.

Decision Tasks

In each pair, one person will have the role of A, and the other will have the role of B. The amount of money you earn depends on the decisions made in your pair.

On the designated decision sheet, each person A will indicate whether he or she wishes to choose IN or OUT. If A chooses OUT, A and B each receive $5. We will collect these sheets after the choices have been indicated. Next, each person B will indicate whether he or she wishes to choose ROLL or DON'T ROLL (a die). Note that B will not know whether A has chosen IN or OUT; however, since B's decision will only make a difference when A has chosen IN, we ask B's to presume (for the purpose of making this decision) that A has chosen IN.

If A has chosen IN and B chooses DON'T ROLL, then B receives $14 and A receives $0. If B chooses ROLL, B receives $10 and a six-sided die is rolled to determine A's payoff. If the die comes up 1, A receives $0; if the die comes up 2–6, A receives $12. (All of these amounts are in addition to the $5 show-up fee.) This information is summarized in the chart below:

	A Receives	B Receives
A chooses OUT	$5	$5
A chooses IN, B chooses DON'T ROLL	$0	$14
A chooses IN, B chooses ROLL, die = 1	$0	$10
A chooses IN, B chooses ROLL, die = 2, 3, 4, 5, or 6	$12	$10

A Message

Prior to the decision by A concerning IN or OUT, B has an option to send a message to A. Each B receives a blank sheet, on which a message can be written, if desired. We will allow time as needed for people to write messages, then these will be collected. Please print clearly if you are B and you wish to send a message to A.

In these messages, no one is allowed to identify him or herself by name or number or gender or appearance. (The experimenter will monitor the messages. Violations, as determined by the experimenter, will result in B receiving only the $5 show-up fee, and the paired A receiving the average amount received by other A's.) Other than these restrictions, B may say anything that he or she wishes in this message. If B does not wish to not send a message, B should simply write an "X" in the space provided.

Payoff Procedures

Each of you will receive a "code." The code will be written on your response form. The purpose of this code is so that the experimenters can insure that any message sent by B is received by the paired A. The code also allows the experimenters to insure that your payoff is based on your action and the action of the person with whom you are paired while maintaining that no participant will ever know the identity of the person with whom he or she is paired.

The code you receive will also be on a "key." After the experiment is completed, you will be able to receive your cash payment in a sealed envelope from a locked mailbox, located in another room here in the lab. The envelopes will be identical on the outside, so that no one, including the experimenter, will ever know the decision, message, or payoff of any participant. To protect your anonymity, you should place the coded key in your pocket once you receive it. After you have collected your payoff envelope, there will be a container into which everyone will drop their keys.

You have the role of A Your code_____

Please circle your choice of (1) IN or (2) OUT and then place this form back in the envelope. You must circle exactly one choice. If you received a message from your paired B, please place it back in the envelope as well.

(1) IN

A receives $0 & B receives $14 if B chooses DON'T ROLL
A receives $0 & B receives $10 if B chooses ROLL & die = 1
A receives $12 & B receives $10 if B chooses ROLL & die = 2,3,4,5 or 6

or

(2) OUT

A receives $5 & B receives $5

You have the role of B Your code_____

Please circle your choice of (1) DON'T ROLL or (2) ROLL and then place this form back in the envelope. You must circle exactly one choice.

(1) DON'T ROLL

A receives $5 & B receives $5 if A chooses OUT
A receives $0 & B receives $14 if A chooses IN

or

(2) ROLL

A receives $5 & B receives $5 if A chooses OUT
A receives $0 & B receives $10 if A chooses IN and B chooses ROLL & die = 1
A receives $12 & B receives $10 if A chooses IN and B chooses ROLL & die = 2,3,4,5 or 6

The experimenter will cut this page along the dashed line and only the bottom portion will be sent to A, if you choose to send a message. Place an "X" in the provided space if you do not wish so send a message to A.

✂----------

You may print a message to your paired A below if you wish.

Appendix B: Coder Instructions and Coded Messages

Coder Instructions

Purpose: To study how communication affects the play of the game.

Game: Refer to the attached instructions for the experiment.

Coding Rules:

(1) The unit of observation is a single message.

(2) If a message contains the relevant category of content, enter the appropriate category code.

"0" a blank message

"1" a promise or statement of intention of the action the message's sender will take (The senders actions are limited to Roll and Don't Roll)

"2" a message that is not blank, but does not contain a promise or statement of intention of the action the messenger's sender will take.

(3) You should **independently** code all messages. Do not discuss with anyone about which statements should fall into which categories.

(4) Your job is to capture the content of the message as sent rather than why it was sent or what effect it had. Think of yourself as a "coding machine."

You will be paid **$20** for coding all messages. Thank you.

Code	Message
1	I'm Going to choose to roll. You have a one in six chance of making 12. Like me, if your in this study, you probably need the money. Choose IN, I guess you can't Tell but I'm not trying to decieve you.
0	
1	I will not choose the Don't Roll option so feel free to go with the 5/6 odds for the dice roll.
2	Your move
1/2	If you pick "in" every time, and I pick roll every time we will both win the highest amount of money safely. For every 6 rolls if you pick in you have a 1/6 chance of getting $0 & a 5/6 Chance of getting $12.00. It's in our best interest to pick "in" and Roll every time.
1	Look, we'll both make a lot more money if you go in and I roll every time.
2	I will roll every time, so if you go in we'll both make off pretty good. There is more of a chance for both of us to make more if you always choose in, Odds are in both our Favors iF you choose in.
0	
0	
1	I'm In it to Roll with it.
2	Trust me and choose ~~to roll~~ to be in. It is the best odds for both of us, even if you make more money
2	I' am B and I wish to send a message to A. You should ~~Roll~~ choose in
0	
2	Stay In
0	
0	
1	I chose to roll the die. Gives you a 83% chance at $12 extra dollars if you want to go IN.
0	
1	I chose to roll
0	
2	Choose IN - You won't be sorry.
0	

1	PLEASE choose "IN" because I am choosing to "ROLL" - this is the best option for both of us together.
0	
2	INNER
0	
1	If you choose In, I'll choose roll. Gives us both to make more money, which seems fair. Go Team!
0	
0	
2	Choose In
0	
0	
0	
1/2	Lets Roll 5/6 chance of making more money
1	I CHoSE To RoLL.
0	
0	
2	IN
2	If you choose to go in, we can both walk away with something hopefully!
0	
1/2	If you are willing to take a 5/6 chance of getting more than 5, I'm in.
2	There is no good or evil. Only power, and those too weak to seak it.
0	
1	Hi! Im choose Roll
2	Hey buddy, I think should choose IN because

A single number under the heading Code indicates that all four coders coded the message the same. 1/2 indicates that at least one coder coded the message as a 1 and at least 1 coder coded the message as a 2. Messages are reported as written and have not been edited.